Abalone poaching confiscation trends for Zones A-D up until 2007

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SUMMARY

Poaching confiscation data have been updated using all data currently available up until the end of May 2007. The data have been reworked in terms of a standard Model year *y* that is taken to run from October of year *y*-1 to September of year *y*. This was necessary for reasons of internal consistency in the assessment process which uses a Model year as thus defined.

Poaching trend assumptions

The poaching confiscation data are used to obtain base-case estimates of the trend in poaching over time in each of Zones A-D. A better measure of changes in the level of poaching in a Zone is not confiscation *per se*, but the Confiscations Per Unit of Policing Effort (CPUPE). Table 1 shows the poaching trend based only on the location-known zonal confiscation data. As in previous years, a linear increase in poaching (from zero in 1990 increasing up to the 1994 level) is assumed for Zone C and for Zone D (from zero in 1991 increasing up to the 1994 level) because confiscation data are available only from 1994 onwards. Poaching is thought to have started earlier in these Zones than in Zones A and B.

Computations take account of confiscated abalone which may have been taken from the Eastern Cape and from Dyer Island. As previously agreed by the WG, the Zone D data (number of abalone confiscated) for Model years 2001 to 2003 inclusive have been halved to account for the increase in poaching confiscations from Betty's Bay, a marine reserve area located within Zone D. Given that the level of poaching from the reserve in subsequent years is thought to be less than this, for Model years 2004 - 2007 it is assumed that 0.20 of the Zone D confiscations are taken from Betty's Bay.

When considering poached abalone that is likely to have come from each of Zones A and B, rather than from, Dyer Island, the assumption was used that there are approximately equal amounts poached from each of Zones A, B and Dyer Island: the recorded confiscation amounts for each of Zones A and B are thus reduced by one-third each for all years from 2001.

Poaching data for Model year 2007 are currently only available for 8 months (up until the end of May) and hence (as with last year's assessment) have been linearly extrapolated to make them comparable to the estimates for the previous years. Note that the data suggest that the number of abalone confiscated from Zone A is likely to reach a peak in Model year 2007.

The policing efficiency levels shown in Table 2 represent the "best guess" of the increase in policing efficiency based on knowledge of police operations (as previously advised by Marcel Kroese, MCM). Note that, for example, a policing level factor of 2 implies a 100% increase in policing efficiency so that the corresponding confiscation amounts are multiplied by a factor of 0.5 to make them comparable to the other values. Note further that these computations are preliminary as the *2007 policing indices have here been assumed equal to the 2006 indices but this still needs to be discussed by the WG*.

The WG agreed at the last meeting to revise the assumed annual policing level estimates to take into account the belief by the majority present that policing efficiency has declined slightly in the last 3 years. Moreover, it was argued that policing has been very poor in Zone A recently and hence that policing efficiency in this zone is substantially worse than over the preceding period. A separate policing efficiency index has thus been assumed for Zone A (see Table 1).

The *recommended* revised poaching trends for use as inputs (in terms of relative numbers poached) into the 2007 model runs are summarised in Table 2 and Fig. 1. Fig. 1 also shows a 3-point moving average superimposed on each plot. It is recommended that these smoothed plots are used as inputs to the model in preference to the unsmoothed CPUPE trends.

Acknowledgements

Data were provided by Angus MacKenzie, MCM and is gratefully acknowledged.

Table 1. Summary of "Zone-known" confiscations for each of Zones A-D. The data include adjustments to account for takes from Betty's Bay and Dyer Island. These data are used to compute the poaching trend scenarios given in the next table.

Model Year	Zone A	Zone B	Zone C	Zone D
1994	0	415	9852	1081
1995	0	2633	15145	2654
1996	0	1502	12658	1560
1997	5843	4470	15961	2969
1998	24673	7663	10674	3521
1999	13470	3656	6843	2393
2000	8952	17650	11962	4939
2001	6132	25915	4652	4266
2002	30344	62242	9549	6996
2003	19272	23134	5109	5830
2004	37478	13189	6329	2678
2005	22188	10411	2973	2794
2006	20225	12743	2817	3478
2007	41224	6139	1787	1587
Yr when Poaching at a maximum	2007	2002	1997	2002

Table 2. Summary of revised 2007 reference poaching trend scenarios for each of the abalone fishery Zones A-D. Note that the proportions in each column represent the poaching intensity in that Zone relative to the maximum poaching level observed for that Zone. The "policing efficiency levels" shown in the last two columns were proposed by the Abalone Working Group and have been used to derive modified time series representing confiscations-per-unit-policing. For all Zones A-D, all years from 1980 to 1993 are set to 10% of the 1997 value; and for Zone A , years from 1994 to 1996 are similarly set to 10% of the 1997 Zone A value. Other model sensitivities will most likely also be tested. Note that for Zone C, the same pattern of poaching is assumed to apply to subareas CNP and CP. Note that these computations are still preliminary as the *recommendation that the 2006 policing efficiency level be taken as the same as the 2005 level still needs to be adopted by the WG.*

	Zone A	Zone B	Zone C	Zone D	Policing efficiency level	Policing efficiency ZONE A
Pre-1980	0	0	0	0		
1980-1989	0.006	0.008	0.096	0.048		
1990	0.006	0.008	0.096	0.048		
1991	0.006	0.008	0.096	0.048		
1992	0.006	0.008	0.096	0.048		
1993	0.006	0.008	0.096	0.048		
1994	0.006	0.008	0.651	0.193	1	1
1995	0.006	0.053	1	0.474	1	1
1996	0.006	0.030	0.836	0.279	1	1
1997	0.064	0.082	0.958	0.482	1.1	1.1
1998	0.272	0.140	0.641	0.572	1.1	1.1
1999	0.131	0.059	0.361	0.342	1.25	1.25
2000	0.087	0.284	0.632	0.706	1.25	1.25
2001	0.059	0.416	0.246	0.610	1.25	1.25
2002	0.294	1.000	0.504	1.000	1.25	1.25
2003	0.187	0.372	0.270	0.833	1.25	1.25
2004	0.455	0.265	0.418	0.478	1	1
2005	0.269	0.209	0.196	0.499	1	1
2006	0.491	0.256	0.186	0.621	1	0.5
2007	1.000	0.123	0.118	0.284	1	0.5

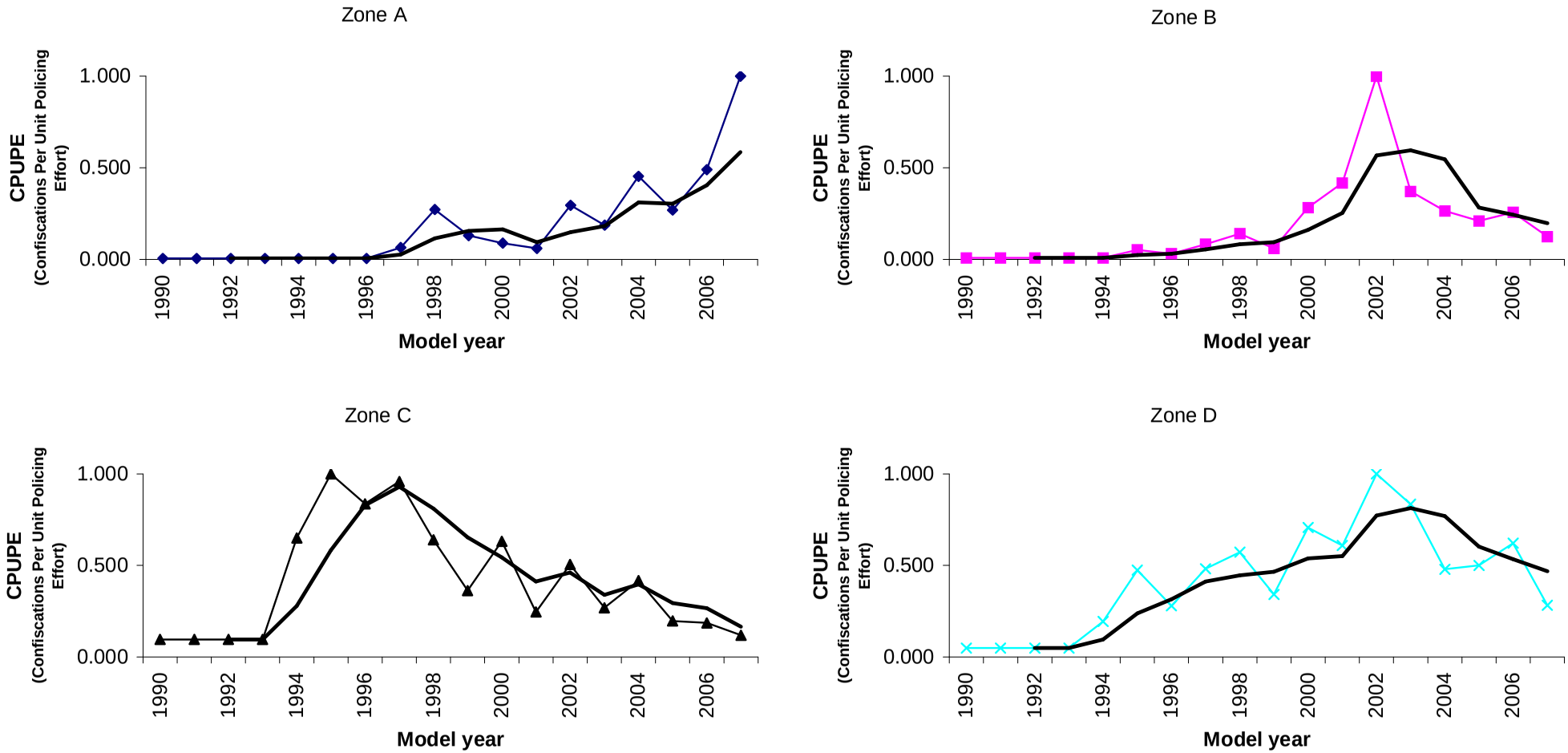

Fig. 1. Plots of CPUPE for each of Zones A-D. The solid black line shows a 3-point moving average.